

Teaching Outline – Tailgate Version

Teaching Topic: Hand Falling Second Growth Timber

Delivery Date:

Type of Session: Indoor/Outdoor facilitated session

Length of Session: 18-20 minutes

Materials required:

- Facilitator should bring:
 - Copy of the OHS regulations as a reference (see Appendix 1)
 - Copy of Safe Work Procedures for Falling
 - BC Faller Training Standard Info-flips
- Facilitator will need to set-up:
 - Computer, iPad/Tablet or TV with DVD player to show the SAFER video; may need an external speaker system for laptop/iPad.

Session Requirements:

- Space of sufficient size to accommodate the size of the group
- Instructor will need to take note of any unresolved questions and make an effort to seek answers

Class Outline and Suggested Times:

1. Explain the purpose of this module (1-2 minutes)
2. Present the Video (12 minutes)
3. Use Teaching Notes to instigate Discussion (3-4 minutes)
4. Competency Evaluation (2 minutes)
5. Closing Remarks (brief)

Detailed Outline:

1. Introduce the module – Explain “what” it is
 - The purpose of this module is to review the need for care when fallers are transitioning from old growth timber to second growth timber
 - Ask the group to use their current knowledge of falling to describe the unique hazards associated with falling second growth timber
 - Ask the group to use their current knowledge of falling to describe the activities and conditions that may present a hazard to fallers in a workplace
2. Present the video
3. Discussion – use the following discussion topics as a guide:
 - Ask the group to compare and contrast the hazards between falling in old growth versus second growth stands
 - 2nd growth has an abundance of self-thinning snags
 - Small diameter but tall trees are hard to wedge and control
 - Abundant matrix of rotten ground debris from 1st pass logging
 - Lower volume per stem incurs production pressures
 - Presence of deciduous trees (sweep to light, often not straight)
 - Stand is highly reactive to wind
 - Explore the production pressures when shifting from old growth to 2nd growth
 - Discuss personal myths about hand-falling second growth
 - Is it true that we think it is safer to fall 2nd growth because of the perception the wood is “round and sound”?
4. Competency Evaluation
 - Name 2 new hazards that you would not have noticed before this course
 - What are the 3 steps you would follow if you identified a new hazard that could not be dealt with?
5. Closing remarks
 - A faller’s skill level must be held to the highest level to safely operate in second growth

Appendix 1: Regulatory References, Part 26: Forestry Operations and Similar Activities

Section 1: Definitions - Dangerous Tree

Dangerous Tree: Means a tree that is a hazard to a worker due to

- (a) its location or lean,
- (b) its physical damage,
- (c) overhead conditions,
- (d) deterioration of its limbs, stem or root system,
- (e) or any combination of the conditions in paragraphs (a) to (d).

Section 2: Planning and conducting a forestry operation

- (1) The owner of a forestry operation must ensure that all activities of the forestry operation are both planned and conducted in a manner consistent with this Regulation and with safe work practices acceptable to the Board.
- (2) Every person who has knowledge and control of any particular activity in a forestry operation must ensure that the activity is both planned and conducted in a manner consistent with this Regulation and with safe work practices acceptable to the Board.
- (3) The planning required under this section must
 - (a) Include the identification of any work activities or conditions at the workplace where there is a known or reasonably foreseeable risk to workers,
 - (b) To be completed before work commences on the relevant activity, and
 - (c) Be documented at the time of planning.
- (4) If, after any planning referred to in subsection (3), there is a change in the workplace circumstances, including the work activities and the conditions of the workplace, and the change poses or creates a known or reasonably foreseeable risk to workers that was not previously identified, then
 - (a) The plan must be amended to identify and address the risk and provide for the health and safety of the workers at the workplace, and
 - (b) The amendment must be documented as soon as is practicable.

Section 11: Dangerous Trees

- (1) If it is known or reasonably foreseeable that work will expose a worker to a dangerous tree,
 - (a) the tree must be felled, or
 - (b) a risk assessment of the tree must be undertaken by a person who has completed a training program acceptable to the Board.



- (2) If a risk assessment under subsection (1) determines that a tree poses a risk to a worker, the recommendations made in the risk assessment for eliminating or minimizing the risk must be implemented before the work referred to in that subsection starts.
- (3) Despite subsections (1) and (2), if work in a forestry operation is to be carried out in an area that has more than 500 dangerous trees per hectare, the Board may approve a request to work without felling or assessing all the dangerous trees, if before the work starts,
 - (a) a person who has completed a training program acceptable to the Board conducts a risk assessment of a representative sample of the dangerous trees, and
 - (b) any recommendations made in the risk assessment for eliminating or minimizing the risks are implemented.

26.22.1 Falling supervisors for forestry operations

- (1) A qualified supervisor must be designated for all falling and associated bucking activities in a forestry operation.
- (2) The supervisor designated under subsection (1) must
 - (a) ensure that the falling and bucking activities are planned and conducted in accordance with this Regulation,
 - (b) inspect the workplace of each faller at time intervals appropriate to the risks, and
 - (c) keep a record of every inspection conducted under paragraph (b).
- (3) The supervisor designated under subsection (1) must not undertake or be assigned activities which interfere with performance of the supervisor's duties under subsection (2).

[Enacted by B.C. Reg. 20/2008, effective May 1, 2008.]

26.23 Procedures for falling and bucking

- (1) In this section and in section 26.24, "**brushing**" means the striking of a standing tree by a tree being felled if the strike is a direct blow or a glancing blow of sufficient force to cause one or more branches to break at or near the stem of the standing tree.
- (2) Fallers and buckers associated with falling activities must be provided with and follow written safe work practices acceptable to the Board for the type of work activity they perform, including procedures for the following:
 - (a) establishing minimum and maximum distances between fallers and other workers;
 - (b) planning and constructing escape routes;
 - (c) controlling the fall of trees;
 - (d) minimizing unnecessary brushing;
 - (e) dealing with dangerous trees;
 - (f) bucking trees and logs;
 - (g) using mechanical assistance to fall trees;

- (h) summoning and rendering assistance to manage a falling difficulty or to deal with an emergency;
- (i) conducting special or innovative harvesting techniques;
- (j) ensuring the well-being of each faller and buckler at least every half hour and at the end of the work shift.

26.24 Responsibility for falling and bucking

- (1) Subject to section 26.29 (3), before a tree is felled, all workers must be clear of the area within a 2 tree-length radius of the tree.
- (2) Before falling or bucking starts, all obstructions to the activity must be cleared and a safe escape route to a predetermined safe position must be prepared.
- (3) A tree must not be felled if it could strike any stationary or running line of any operational equipment.
- (4) If it is necessary to pack or shovel snow to reduce stump height, the depth of the depression at the base of the tree must not exceed 45 cm (18 in.).
- (5) The falling of a tree must be conducted in accordance with the following procedures:
 - (a) a sufficient undercut must be used;
 - (b) the undercut must be complete and cleaned out;
 - (c) sufficient holding wood must be maintained;
 - (d) the backcut must be higher than the undercut to provide a step on the stump;
 - (e) wedging tools must be immediately available and, unless the tree has a pronounced favourable lean, wedges must be set.
- (5.1) When a tree is being felled, the tree must not brush standing trees if that can be avoided.
- (6) A tree must not be used to cause another partially cut tree to fall in succession unless
 - (a) it is necessary to do so to overcome a specific falling difficulty, and
 - (b) the succession falling is done in accordance with subsection (6.1).
- (6.1) The following apply for the purposes of subsection (6):
 - (a) only one tree may be used to cause another partially cut tree to fall in succession;
 - (b) only those trees necessary to deal with the falling difficulty referred to in subsection (6) are partially cut;
 - (c) a wedge is driven into the backcut of each partially cut tree.
- (7) When a tree starts to fall, the faller and any other worker present must move quickly to a predetermined safe position, at least 3 m (10 ft.) away from the base of the tree where possible, and take cover if available.
- (8) All workers must be clear of the hazard area before a tree or log is bucked.

26.25 Dangerous trees and logs

(1) Falling or bucking must not be started if

- (a) a tree or log is in a condition that, if felled or bucked in that condition, the tree or log would pose a reasonably foreseeable risk to a worker, or
- (b) it appears that the tree cannot be completely felled or the bucking cut cannot be completed, as the case may be.

(2) If for any reason a partially cut tree cannot be completely felled and must be bypassed or left unattended, then the following apply:

- (a) the tree must be clearly marked;
- (b) work, other than that necessary to complete the falling of the tree, must stop in the hazard area until the tree is felled;
- (c) any worker who could enter the hazard area must be alerted to the hazard;
- (d) the supervisor for that falling activity must be notified.

(3) The supervisor referred to in subsection (2) (d) must ensure that

- (a) all workers at risk are notified, and
- (b) the tree is safely felled before other work is undertaken in the hazard area.

(4) If a bucking cut cannot be completed and the partially bucked log must be bypassed or left unattended, then the following apply:

- (a) if possible, a distinct cross must immediately be cut or marked on the top of each end of the log;
- (b) the supervisor for the bucking activity must be notified at the end of the work day;
- (c) the supervisor for the bucking activity must notify all workers at risk.

(5) Subsections (2) to (4) do not apply if the incomplete falling or bucking is part of a planned process in which safe work practices acceptable to the Board are implemented.

26.26 Falling dangerous trees

(1) Where practicable, dangerous trees must be felled

- (a) progressively with the falling of other timber but before falling adjacent live trees, and
- (b) into open areas.

(2) When falling a dangerous tree,

- (a) dangerous bark must be removed, where practicable,
- (b) stump height must, in the judgment of the faller, allow maximum visibility and freedom of action,
- (c) the tree must be felled in the direction of lean whenever possible, and the undercut must be as deep as necessary to minimize the use of wedges and resulting vibration,
- (d) pushing with a green tree must only be undertaken to overcome a falling difficulty, and



(e) wedging over must be used only if there is no alternative, and after a careful assessment of the ability of the dangerous tree to withstand wedging.

(3) If conventional methods cannot be safely employed to fall a dangerous tree, blasting or other acceptable methods must be used.

(4) Falling, bucking or limbing activities must not be undertaken in an area made hazardous by a dangerous tree, or a dangerous tree which has been brushed by a felled tree, until the dangerous tree has been felled.

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Appendix 2: Video Narrative Notes

The WFP/SAFER video is a great training tool for reviewing the need for care when fallers are transitioning from old growth timber to second growth timber. Consider using this video at safety meetings. Get the fallers to summarize learning points, and to propose additional ideas. The trainer should take notes on these learning points and incorporate them as continuous improvement to the training.

KEY THEME

This video highlights the differences between falling on low slope ground, the move towards falling on steeper grounds, and the differences between falling in old growth forests and second growth forests. Emphasis is made about how both types require a high skill level, there is a diligent need for adherence to standards, and there needs to be support from all levels of stakeholders.

VIDEO NARRATIVE NOTES

Safety Steps:

1. Risk assessment
2. Apply undercut and then start back cut
3. Look up and assess for any initial movement (*crucial)
4. Complete the falling cut and move to safety

Maintaining control:

Due to the change in height vs butt diameter ratio – there is a huge amount of leverage if the wedge is not put in fast enough.

- Fallers need to be able to fall within the lean and control it
- Wind poses another risk—debris from the canopy
- Second growth has a lot more top movement than does old growth.
- Root rot is also very common in second growth; leading to less control because there can be up to 50% less hinge wood as a result

Potential Hazards:

1. Presence of hardwood (e.g., alder and maple); they commonly live 40-50 years, decay and then fall down. Have very shallow roots and heavy leans that become entangled in upper canopy.
2. Non-fallers cannot dictate where fallers are allowed to fall. This decision needs to be left up to bull buckers and fallers because they have very limited options under this condition
 - Implication: overhead, brushing, etc. can happen
3. Natural culling: evident due to the material on the ground that needs to be first cut back
4. Dense canopies: fallers need to be aware of the brittle limbs and the increased likelihood that they will fall off because tops are often limb-tied.
5. Canopy issues: fallers still need to do risk assessments but the focus needs to shift to consider hazards coming from above due to lean and potential for falling branches. Need to fall into an open area with no excessive brushing. It's a good habit to use a 45 degree angle.



6. Wind: Falling in second growth forests is a lot more risky than falling in old growth forests when it is windy; increased likelihood that tops and limbs fall down; small diameter but tall trees are prone to wind failure.

Issue: how do we manage the dangerous trees?

- Avoid falling DT's prematurely through timber. An inadequate hole can lead to other trees falling apart.
- Be sure to assess canopies from different angles
- Need to have a clear plan in place for timing removals (cannot be to just fall through the timber)
- Fallers need to bring timber face up in a continuous, progressive manner and be considering the fallers beside them.

Quarter Management:

1. Need to keep an eye out for debris left from previous fallers (ie steel wire in trees)
2. When falling, people tend to think of stems per hectare but you also need to consider the conditions encountered.
 - a. Old lines left behind; trees being felled can get caught up in them and come back at you.
 - b. The older the second growth, the higher the old growth stumps will be.
3. Managing fatigue: in second growth, fallers are falling up to 3x as many stems and are also carrying their saws. As a result, they need to learn to pace themselves and constantly assess their work situation (for decay and overhead dangers).
4. Overall, all stakeholders need to respect the challenges and know that high skill levels need to be achieved. All second growth timber needs to be treated with respect

Adapting to Second Growth:

1. You need to pace yourself – you spend a lot less time dogged into trees and more time carrying the saw.
2. Assessments are more demanding – there are upwards of three times more trees per hectare.
3. Change your equipment – use a smaller saw and shorter bar length adapted to timber (7- 10 pounds lighter), and smaller wedges.
4. There are so many more trees (crown hazards are perhaps hidden, limbs are brittle, crowns often limb tied) – fall out at 45° and use cover to your advantage.
5. Disconnect ground debris. Adjust to the previous logging debris – old stumps are pivot points.
6. Be mindful of the small and tall snags – their tops are unstable, and often their root bases rotted out.
7. Take advantage of your refueling breaks to review the face and take a rest.
8. Stop if getting fatigued or dehydrated. Adjust and adapt to the pace.